PRIOR ART

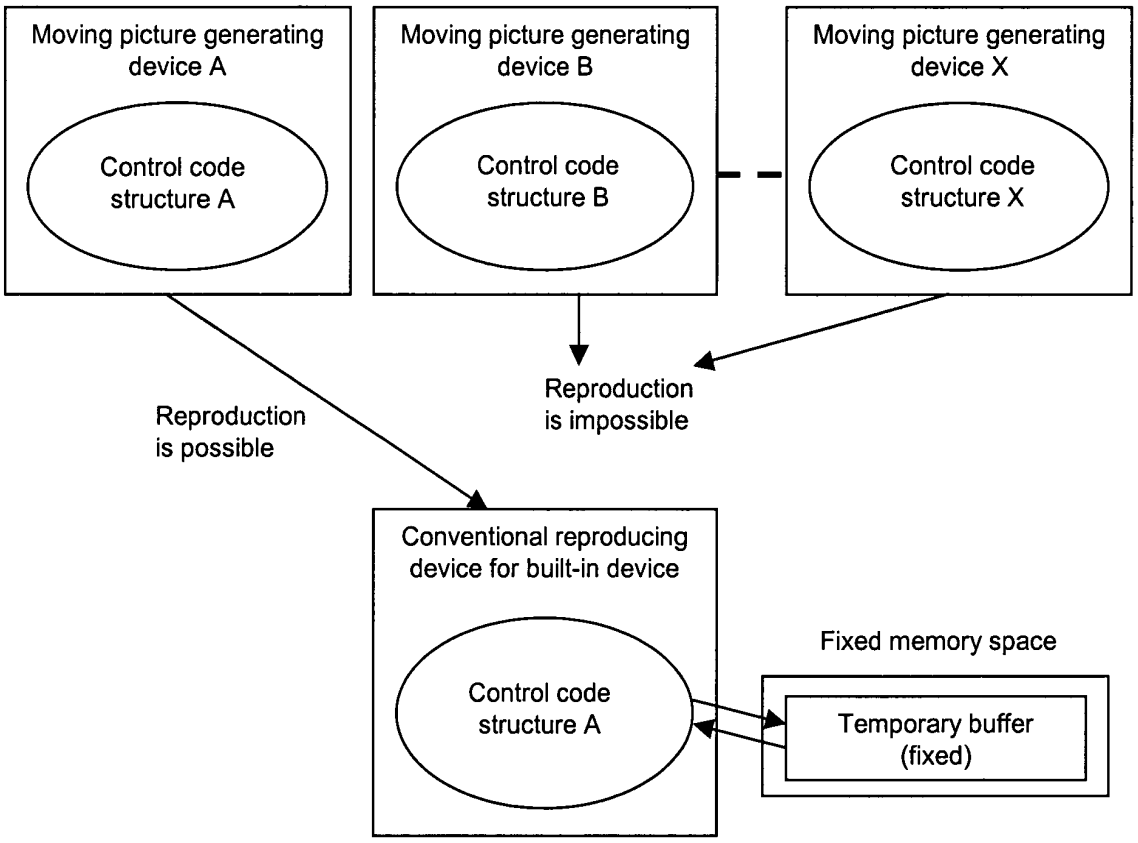


FIG. 1

PRIOR ART

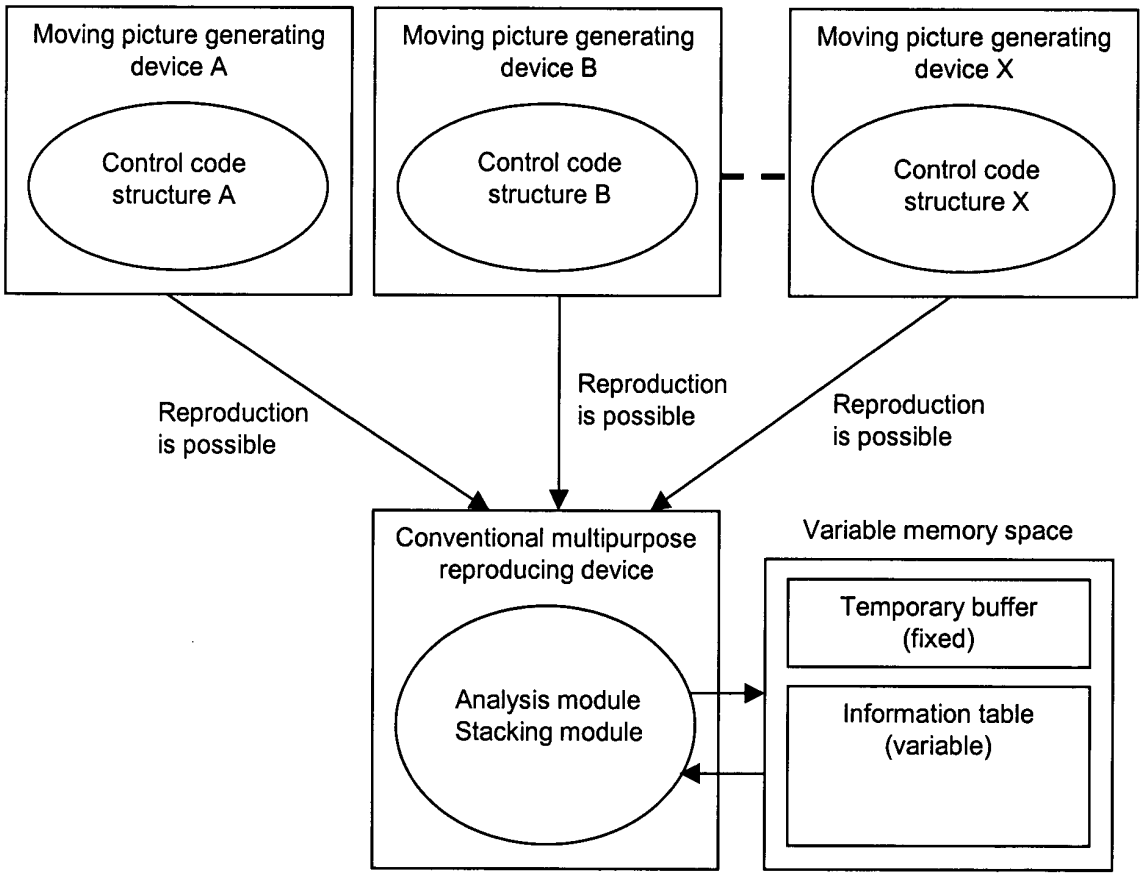


FIG. 2

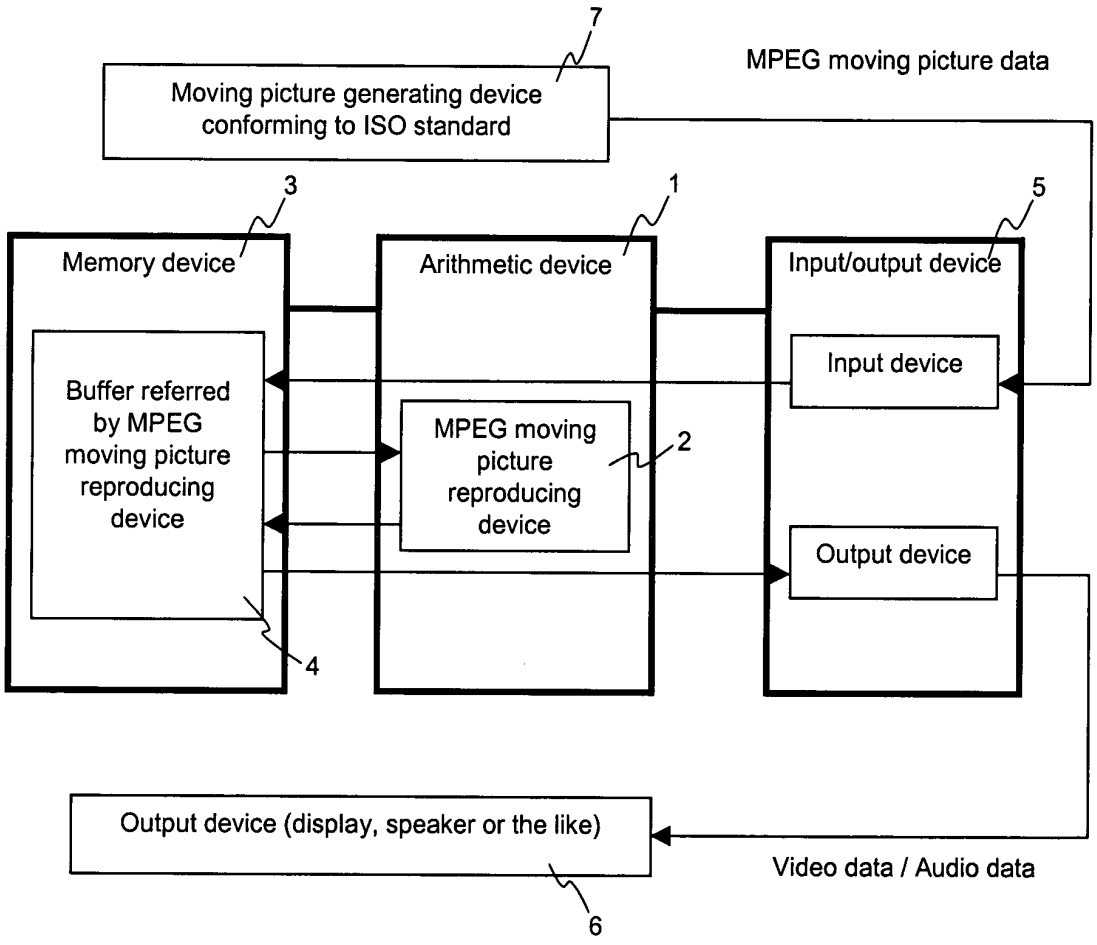

7
Moving picture generating device conforming to ISO standard
MPEG moving picture data
3
Memory device
1
Arithmetic device
5
Input/output device
Buffer referred by MPEG moving picture reproducing device
MPEG moving picture reproducing device
2
Input device
Output device
4
Output device (display, speaker or the like)
Video data / Audio data
6

FIG. 3

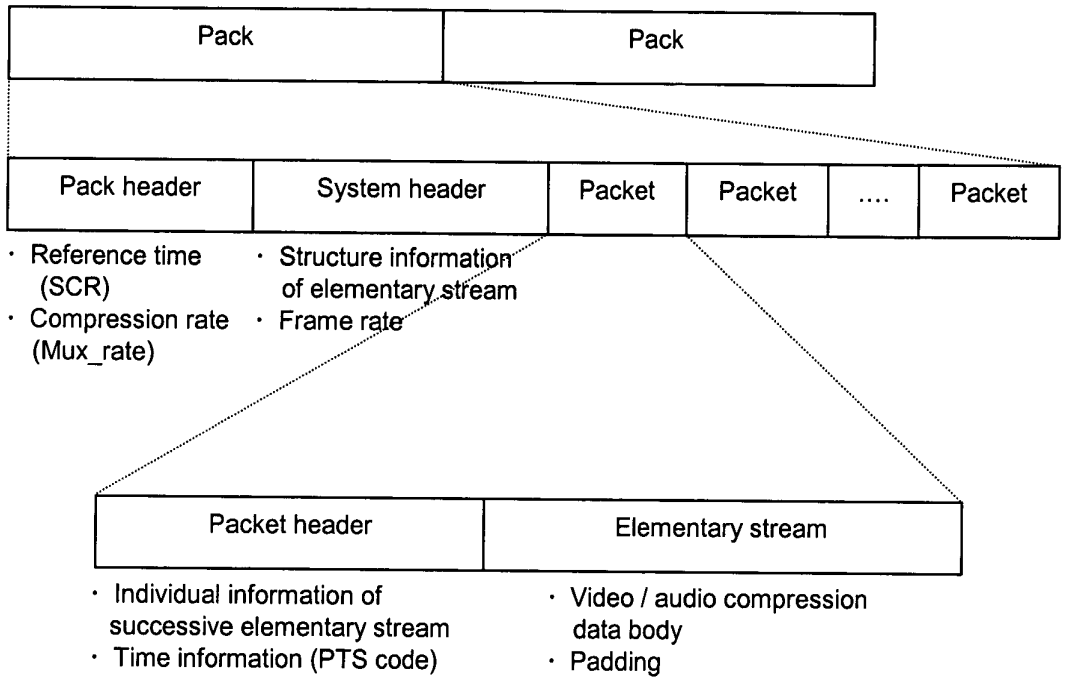

Pack
Pack
Pack header
System header
Packet
Packet
....
Packet
· Reference time (SCR)
· Compression rate (Mux_rate)
· Structure information of elementary stream
· Frame rate
Packet header
Elementary stream
· Individual information of successive elementary stream
· Time information (PTS code)
· Video / audio compression data body
· Padding

FIG. 4

TITLE: MOVING PICTURE REPRODUCING DEVICE AND MOVING PICTURE REPRODUCING METHOD
INVENTORS: Koichiro YAMASHITA
SERIAL NO.:
DOCKET NO.: 121.1052

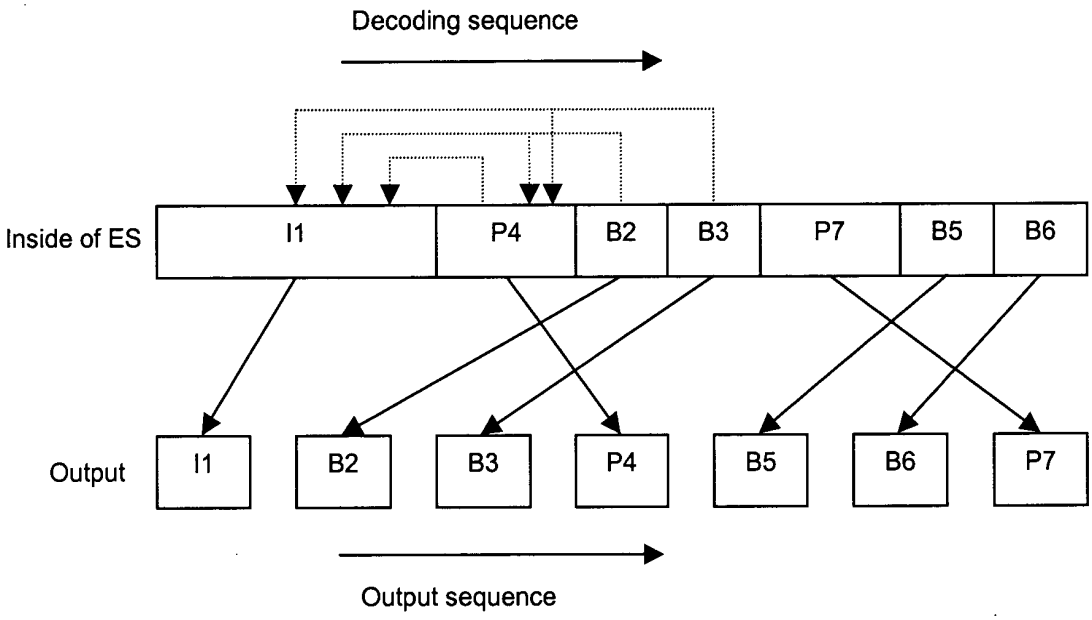
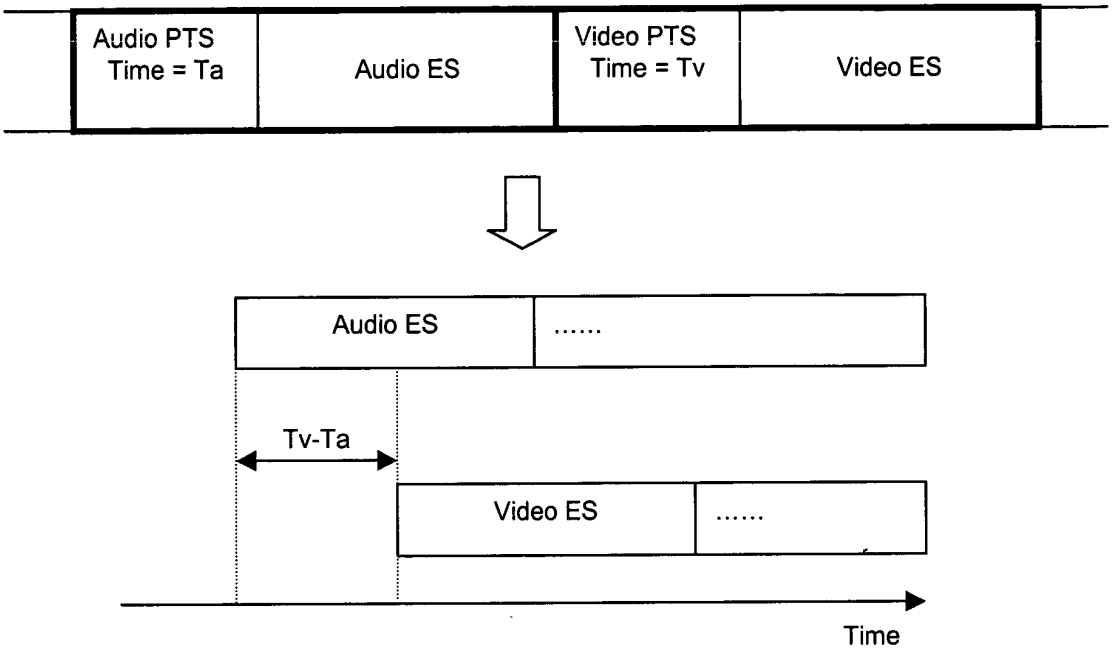


FIG. 5

(1) In the case of Ta<Tv



(2) In the case of Ta>Tv

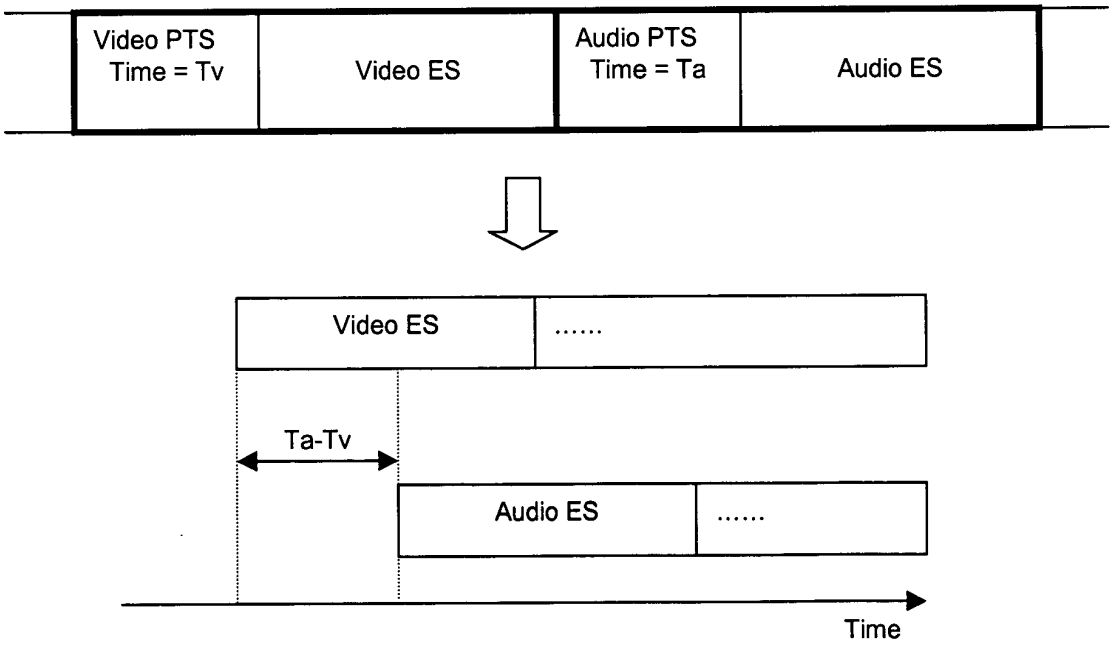


FIG. 6

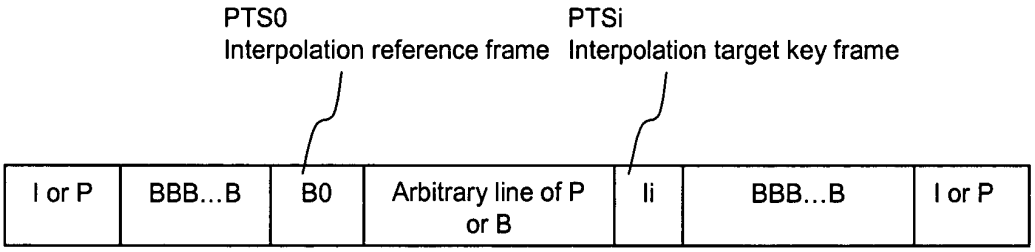

PTS0
Interpolation reference frame
PTSi
Interpolation target key frame
I or P
BBB...B
B0
Arbitrary line of P or B
Ii
BBB...B
I or P

FIG. 7

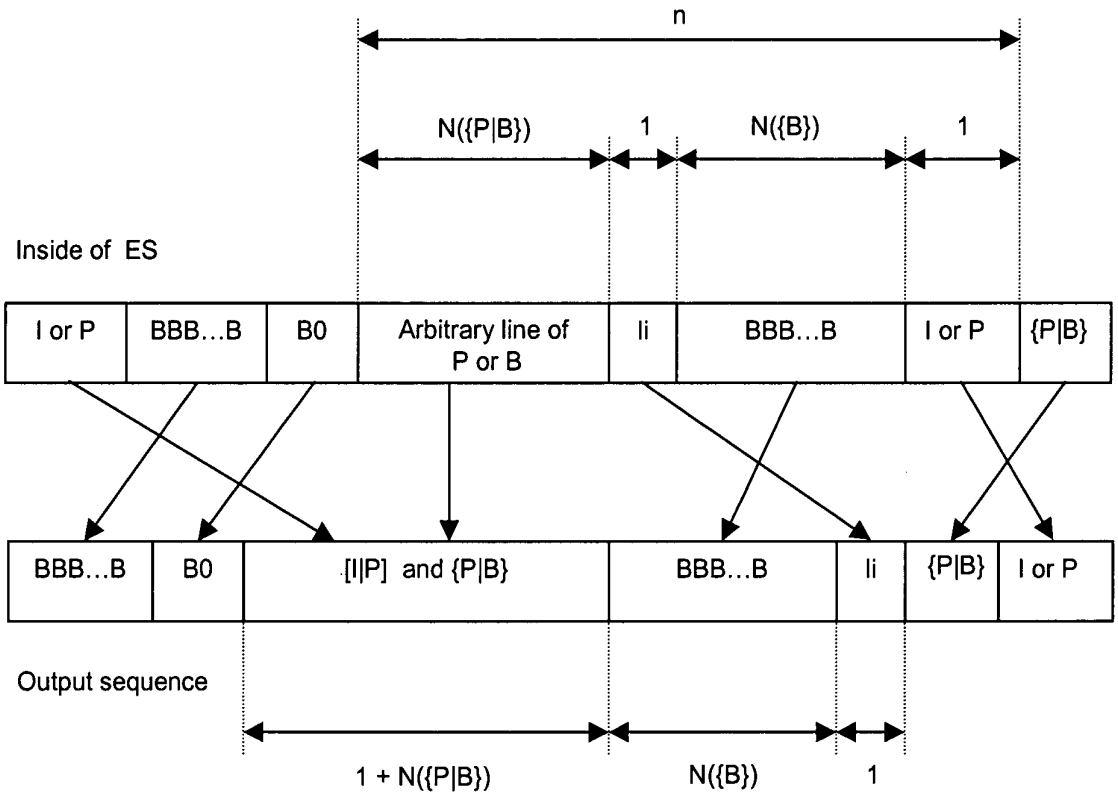

n
N({P|B})
1
N({B})
1
Inside of ES
I or P
BBB...B
B0
Arbitrary line of P or B
Ii
BBB...B
I or P
{P|B}
BBB...B
B0
[I|P] and {P|B}
BBB...B
Ii
{P|B}
I or P
Output sequence
1 + N({P|B})
N({B})
1

FIG. 8

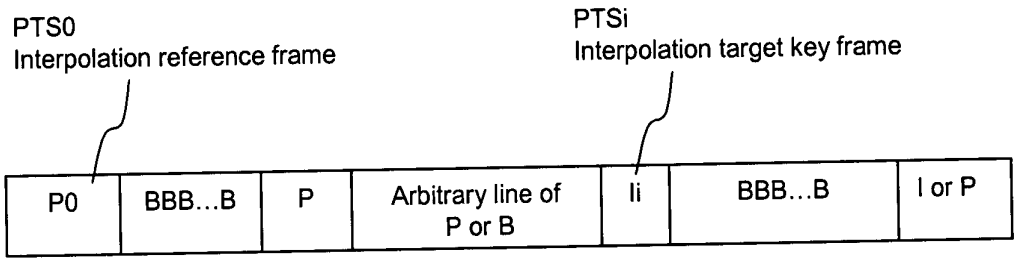

PTS0
Interpolation reference frame
PTSi
Interpolation target key frame
P0
BBB...B
P
Arbitrary line of P or B
Ii
BBB...B
I or P

FIG. 9

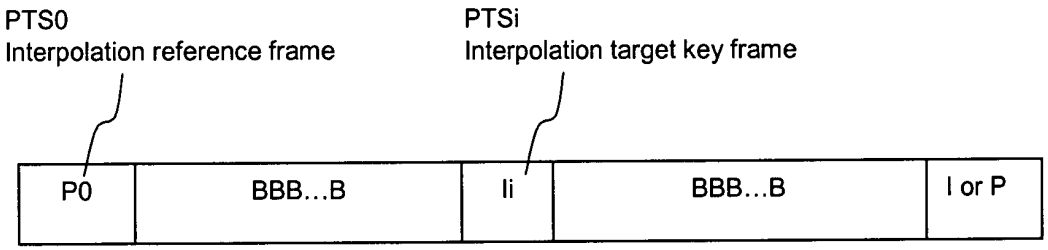

PTS0
Interpolation reference frame
PTSi
Interpolation target key frame
P0
BBB...B
Ii
BBB...B
I or P

FIG. 10

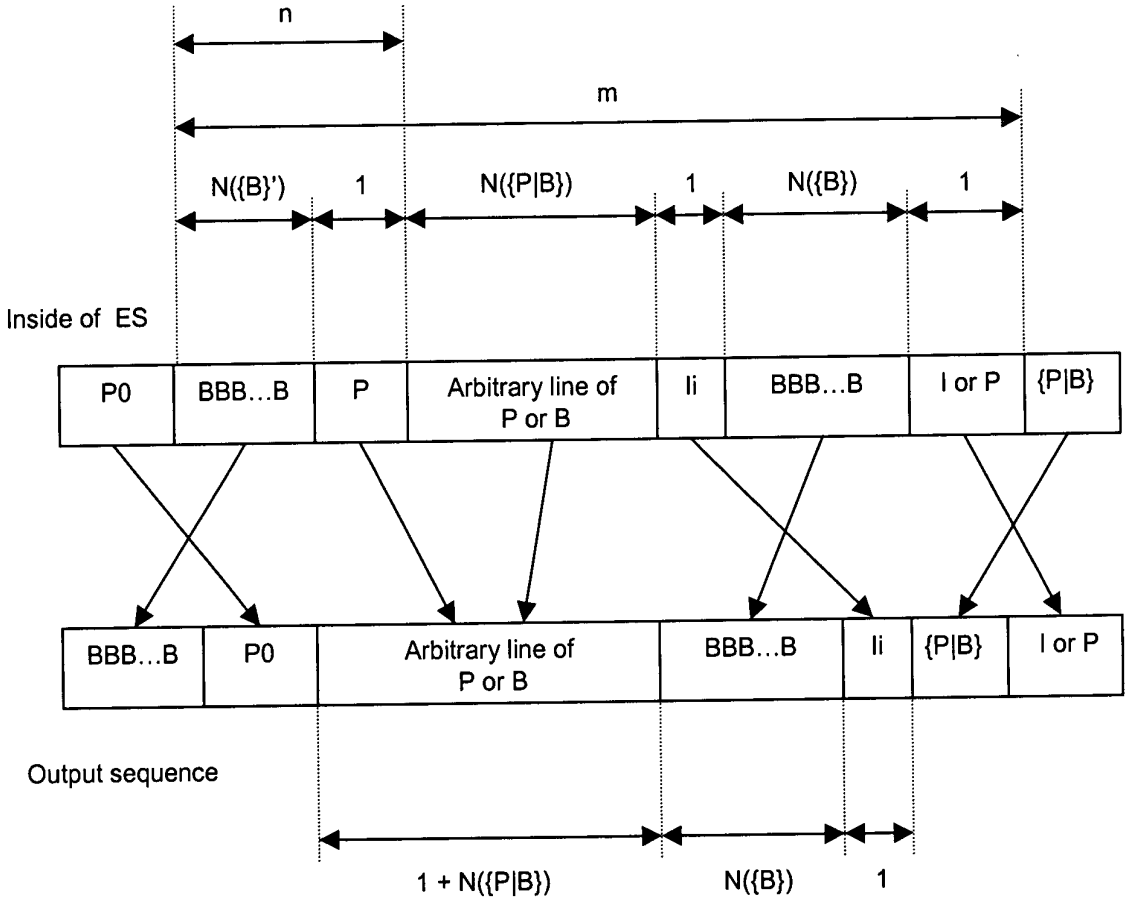

n
m
N({B}')
1
N({P|B})
1
N({B})
1
Inside of ES
P0
BBB...B
P
Arbitrary line of P or B
Ii
BBB...B
I or P
{P|B}
BBB...B
P0
Arbitrary line of P or B
BBB...B
Ii
{P|B}
I or P
Output sequence
1 + N({P|B})
N({B})
1

FIG. 11

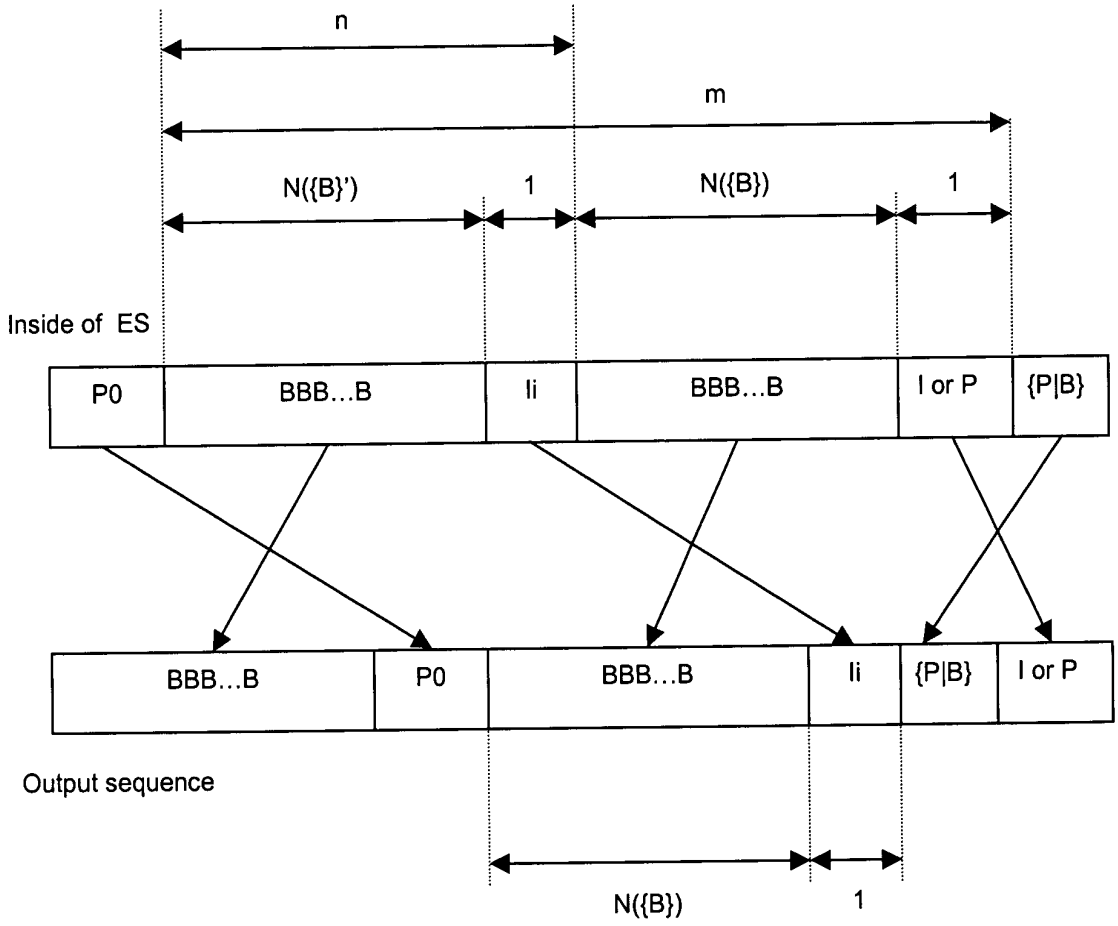

n
m
N({B}')
1
N({B})
1
Inside of ES
P0
BBB...B
Ii
BBB...B
I or P
{P|B}
BBB...B
P0
BBB...B
Ii
{P|B}
I or P
Output sequence
N({B})
1

FIG. 12

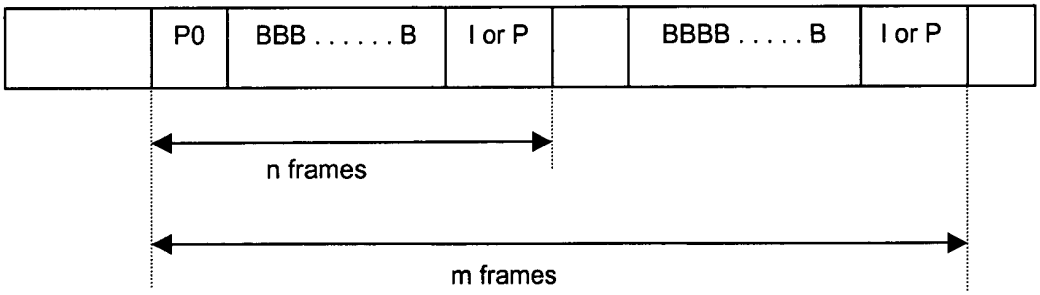


FIG. 13

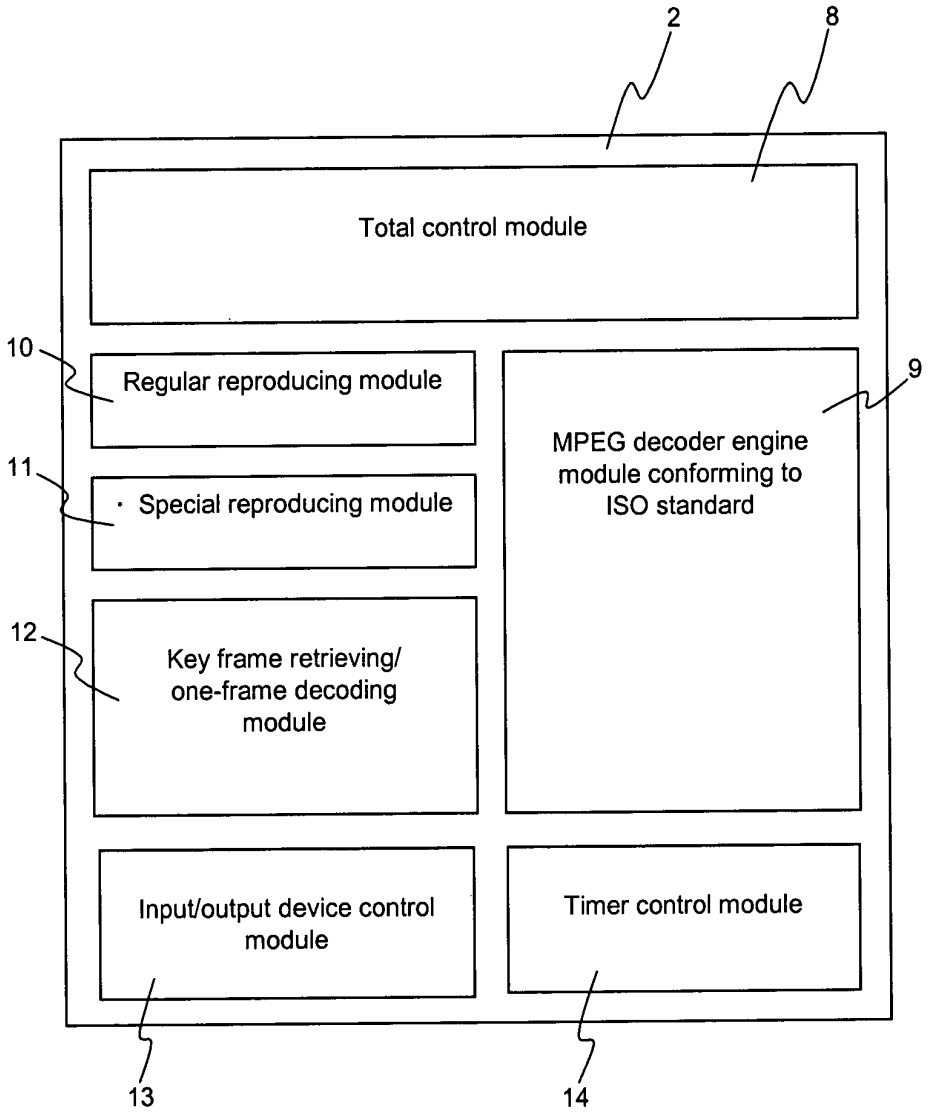

2
8
Total control module
10
Regular reproducing module
11
Special reproducing module
12
Key frame retrieving/ one-frame decoding module
9
MPEG decoder engine module conforming to ISO standard
Input/output device control module
Timer control module
13
14

FIG. 14

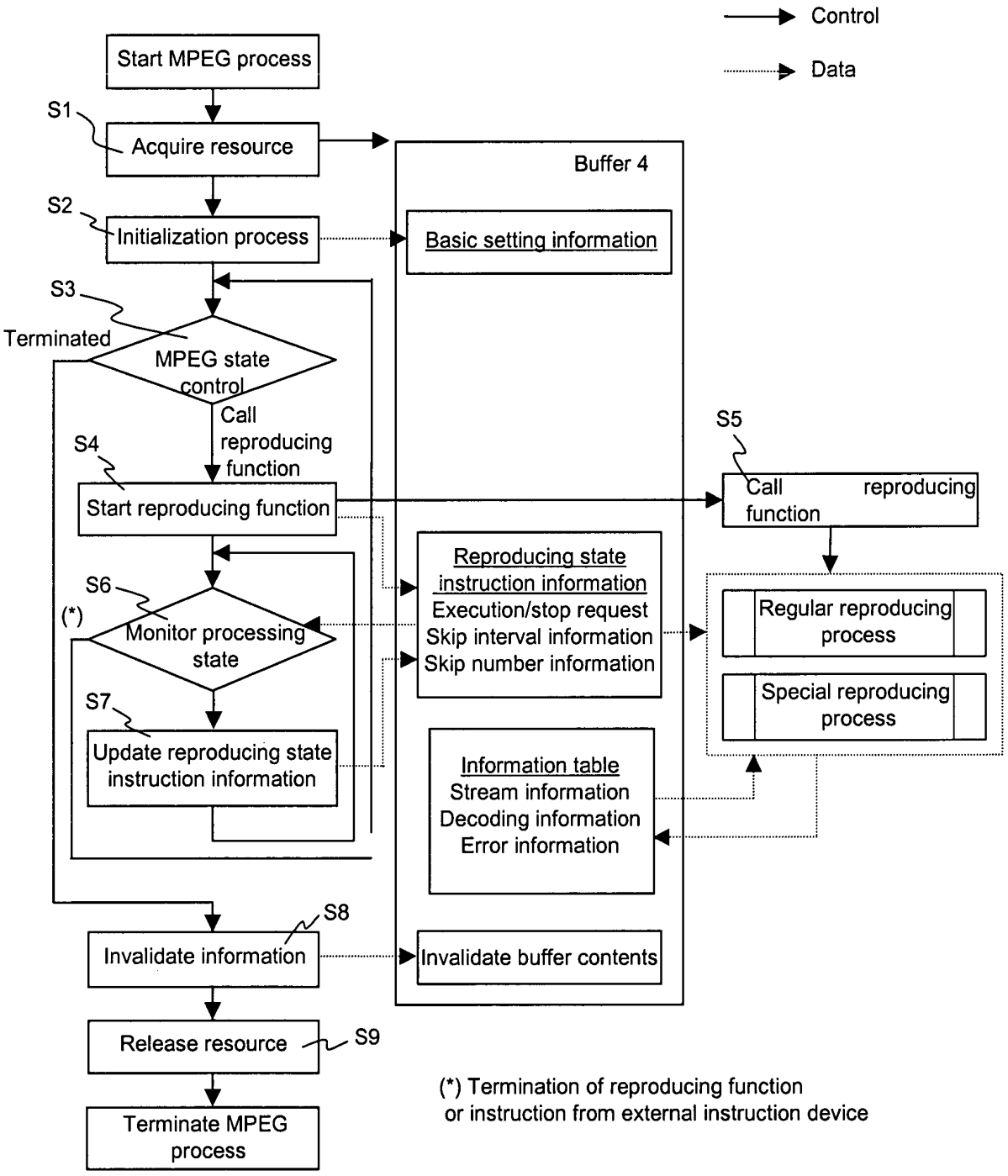

Control
Data
Start MPEG process
S1
Acquire resource
S2
Initialization process
S3
Terminated
MPEG state control
Call reproducing function
S4
Start reproducing function
S5
Call reproducing function
S6
(*)
Monitor processing state
S7
Update reproducing state instruction information
S8
Invalidate information
Release resource
S9
Terminate MPEG process
Buffer 4
Basic setting information
Reproducing state instruction information
Execution/stop request
Skip interval information
Skip number information
Information table
Stream information
Decoding information
Error information
Invalidate buffer contents
Regular reproducing process
Special reproducing process
(*) Termination of reproducing function or instruction from external instruction device

FIG. 15

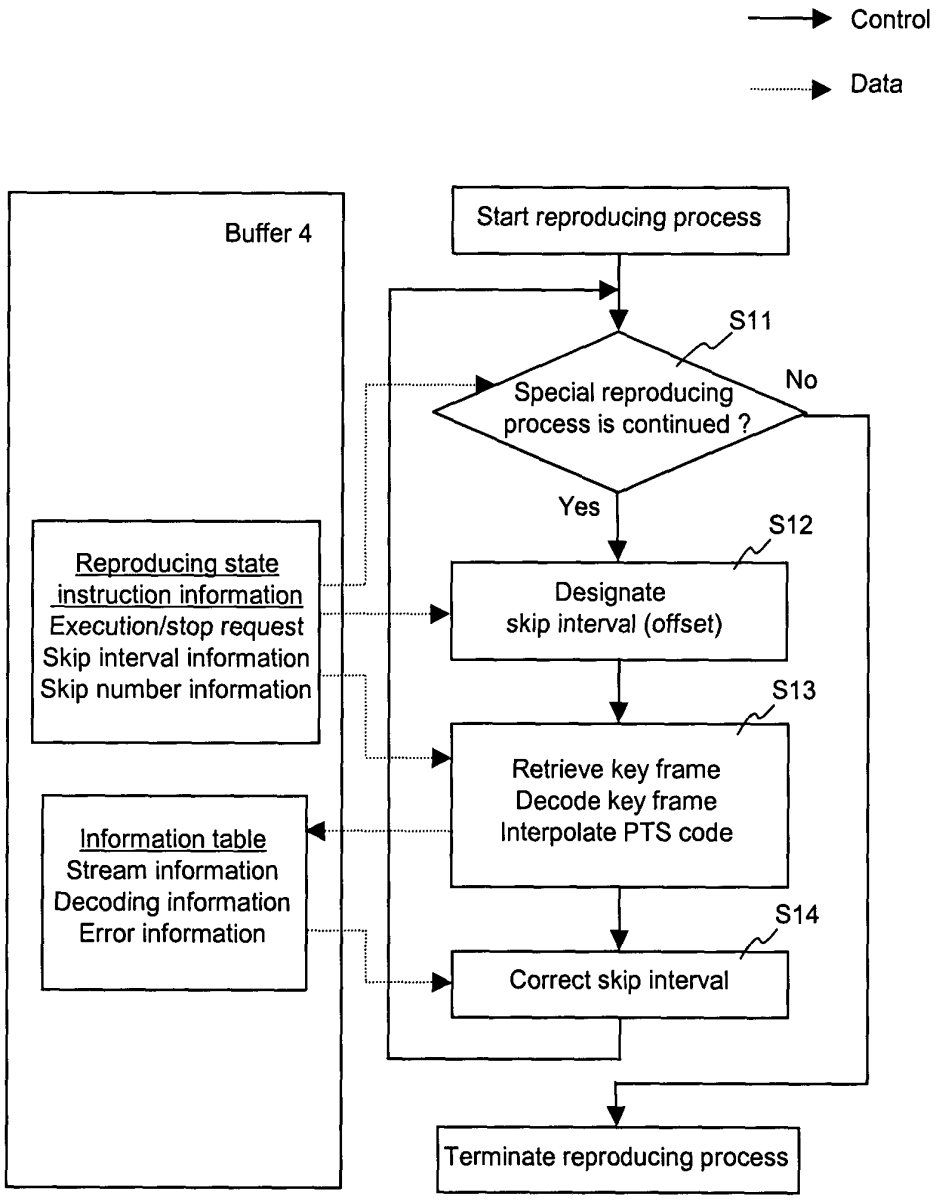

Control
Data
Buffer 4
Start reproducing process
S11
Special reproducing process is continued ?
No
Yes
S12
Designate skip interval (offset)
S13
Retrieve key frame
Decode key frame
Interpolate PTS code
S14
Correct skip interval
Terminate reproducing process
Reproducing state instruction information
Execution/stop request
Skip interval information
Skip number information
Information table
Stream information
Decoding information
Error information

FIG. 16

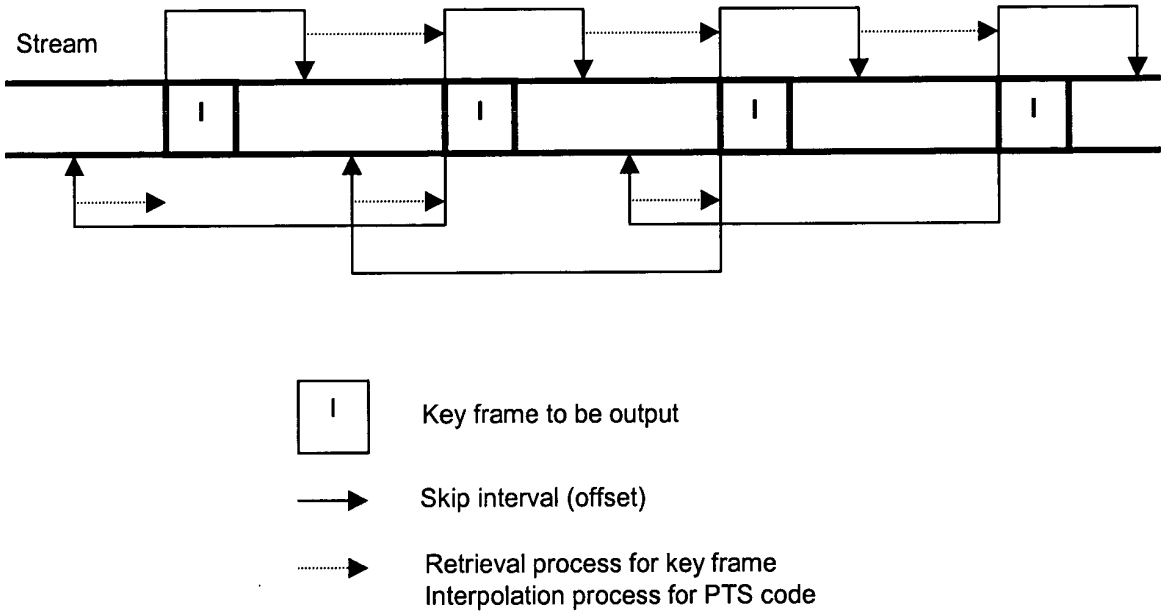

Stream
I
I
I
I
I
Key frame to be output
Skip interval (offset)
Retrieval process for key frame
Interpolation process for PTS code

FIG. 17

	MPEG reproducing software of the present invention	Related reproducing device A (application on multipurpose PC)	Related reproducing device B (hardware mounted as ASIC)
Regular reproduction of MPEG moving picture	Corresponding to an optional moving picture data	Corresponding to an optional moving picture data	Corresponding to a particular moving picture data
Special reproduction of MPEG moving picture	Corresponding to an optional moving picture data	Corresponding to an optional moving picture data	Corresponding to a particular moving picture data
Memory used (Data of QVGA is used)	500KByte or less	About 10Mbyte	About 2Mbyte (outside ASIC)
Cycle of arithmetic device used	About 200MHz About 500mW	About 400MHz About 2W	. . .
Merit	High flexibility Resource of CPU and memory is not wasted	High flexibility	Resource of memory is not wasted
Demerit	Interpolation corresponding to all frames and all picture types is impossible	High flexibility is realized by wasting resource of CPU and memory	Low flexibility due to mounted hardware

FIG. 18